

# **Synthesis of polymer anchored N,N'-bis (3-allylsalicylidene) o-phenylenediamine Co(II) Schiff base complex and its catalytic activity for decomposition of Hydrogen peroxide**

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## **Abstract**

The anchoring of N,N'-bis(3-allyl salicylidene)o-phenylenediamine cobalt(II) Schiff base complex on polymer support has been carried out by suspension copolymerization of synthesized N,N'-bis(3-allyl salicylidene)o-phenylenediamine monomer Schiff base (N,N'-BSPDA) with styrene (St) and divinylbenzene (DVB) using azobisisobutyronitrile (AIBN) as initiator in presence of poly(vinyl alcohol). The polymer anchored Schiff base (N,N'-BSPDA) was subsequently loaded with cobalt(II) ions. The cobalt (II) ions loading, degree of cross-linking and swelling in prepared beads have shown dependence on the amount of DVB taken in the reaction mixture. The amount of N,N'-BSPDA monomer Schiff base and its arrangement in cross-linked beads have also shown dependence on the amount of DVB taken in the reaction mixture. The cross-linked beads (Type-III) obtained at 1.50 mmol of DVB have shown highest loading for cobalt(II) ions (1.18 mmol g<sup>-1</sup> of beads) due to maximum amount of N,N'-BSPDA monomer Schiff base on these beads (1.74 mmol g<sup>-1</sup> of beads). The amount of DVB taken in the reaction mixture has shown significant effect on porosity, internal surface area (SBET), average pore diameter (.D) and degree of swelling in prepared beads. The IR, UV and magnetic measurements have provided sufficient evidences for square planar geometry of N,N'-BSPDA cobalt(II) complex both in homogeneous and heterogeneous conditions. The complexation of cobalt (II) ions on polymer anchored N,N'-BSPDA monomer Schiff base has shown a significant increase in its thermal stability. The catalytic activity of polymer supported N,N'-BSPDAcobalt(II) complex was evaluated under different experimental conditions and its activity was compared with unsupported analogue. The energy of activation for decomposition of hydrogen peroxide with supported N,N'-BSPDAcobalt(II) complex has been found to be low(36.04 kJ mol<sup>-1</sup>) in comparison to unsupported one (61.27 kJ mol<sup>-1</sup>). To explain experimental results, a suitable rate expression has been derived.